



#### GENERAL INFORMATION

Webcor Model 2200-1 is a dual-speed tape recorder that will record and play back half-track monaural recordings. It will record or play at either  $3\frac{3}{4}$  or  $7\frac{1}{2}$  ips.

Voice and music recordings can be made with the microphone, or accessories such as a telephone pickup can be plugged into the input jack.

The Model 2200-1 operates on 60 cycle 105-120 volts AC only.

#### Manufactured By:

Webcor Inc.,  
912 W. North Avenue  
Chicago 22, Illinois

#### HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

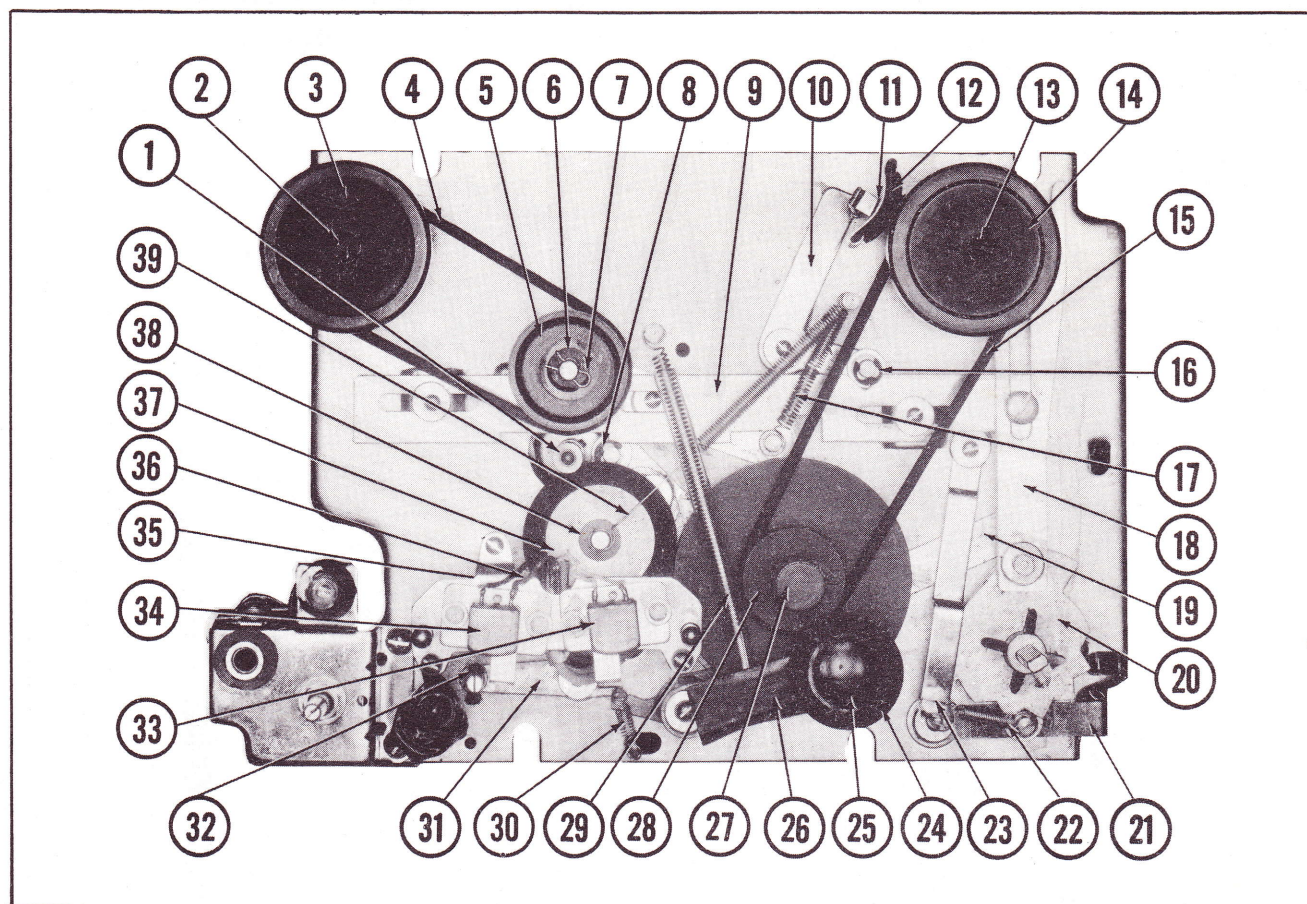


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TOP VIEW OF MECHANISM WITH TOP COVERS REMOVED

## OPERATING INSTRUCTIONS

### Threading the Tape

Place a reel of tape on supply (left) reel spindle; empty reel on take-up (right) spindle. Thread tape in threading slot with shiny side of tape toward front of recorder. Insert end of tape in slot in hub of the empty reel and turn reel counterclockwise to take up slack in tape.

### To Make Recording

Plug microphone into Mic jack. Place removable collar on capstan and secure with knurled screw if recording is to be made at 7 1/2 ips. Remove collar and store on storage post with knurled screw to record at 3 3/4 ips. Turn Off-On Volume control clockwise from Off position and allow sufficient time for tubes to warm up. Move Record safety knob to the left and turn Selector knob to Record to start recording. Adjust Volume control so the record level indicator lamp flashes only on the loudest sounds being recorded.

Hold the microphone approximately eight inches from the mouth when recording voice. Place the microphone two or three feet in front of the loudspeaker when recording from a radio, phonograph or TV set.

The recording is made on the top half of the tape. When the end of the reel is reached, remove full reel from the take-up spindle, turn it over, and

place it on the supply spindle. After threading the tape, another recording can be made on the other half of the tape. This doubles the recording time of a reel of tape.

### To Rewind Tape

Turn the Selector knob to Rewind to rewind the desired amount of tape on the supply reel. Stop tape by turning Selector knob to Stop.

### To Play a Recording

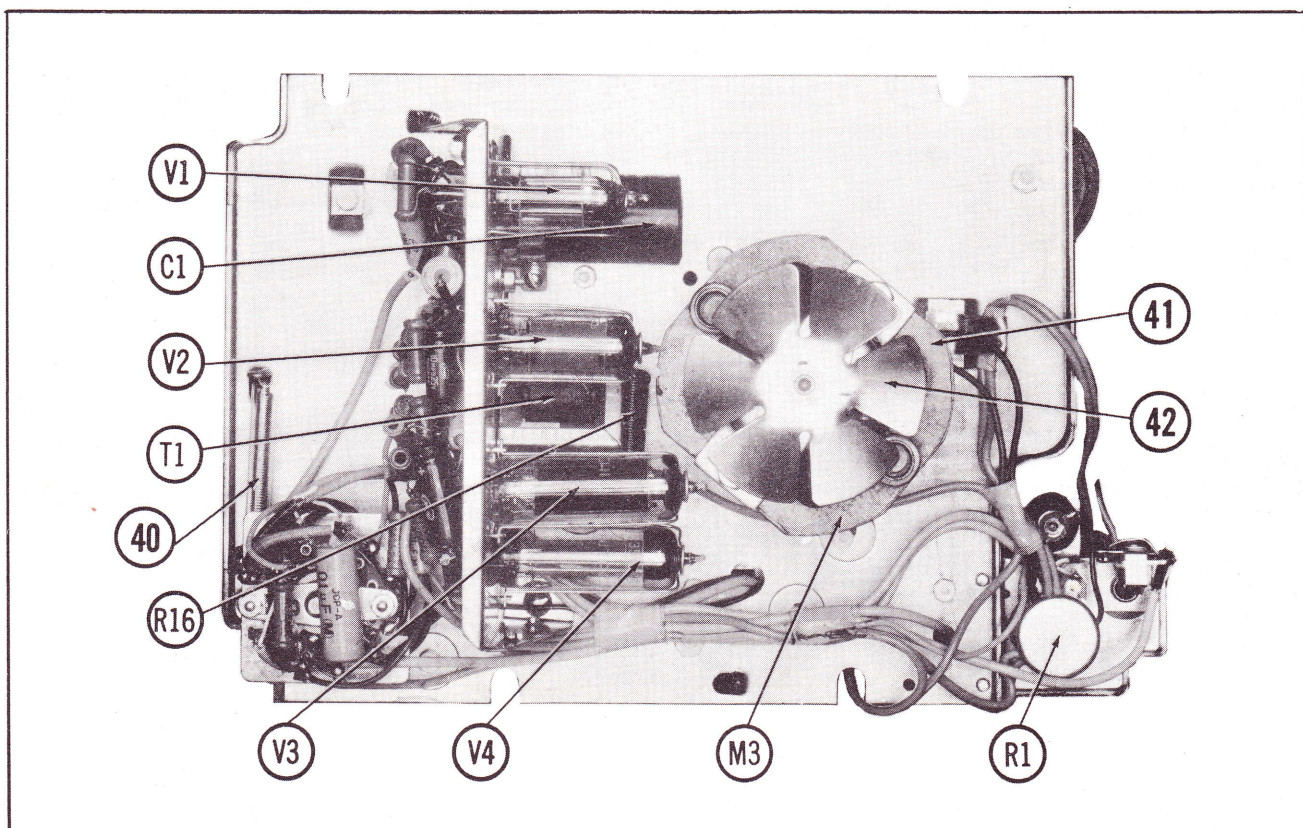
Thread the tape, turn Selector knob to Play and adjust Volume control for desired sound level from speaker.

### To Edit and Splice Tape

Since one track cannot be spliced without affecting the other, recordings to be edited should be limited to one track. Unwanted portions can be cut out and the desired selections joined together. Tape should be cut on a diagonal and the ends joined together with splicing tape applied to the glossy side of the tape. Excess splicing tape should be trimmed from the sides of the tape.

**NOTE:** Use splicing tape only. Do not use regular cellophane tape.





BOTTOM VIEW OF MECHANISM  
FUNCTION OF CONTROLS

### Off-On Volume

Turns power on when moved from extreme counterclockwise (Off) position. Controls record and playback levels.

### Selector Switch

**Stop Position** — Applies brake to take-up reel spindle, moves motor idler away from motor collar, moves pressure pad away from tape and head, and pressure roller away from tape and capstan to stop tape.

**Play Position** — Releases brake on take-up reel spindle, moves motor idler wheel against motor collar, moves pressure pad against tape and head, and moves pressure roller against tape and capstan.

**Rewind Position** — Releases brake on take-up reel spindle, swings rewind pulley to hold rewind drive belt against motor collar. Rewinds tape at high speed.

**Record Position** — Releases brake on take-up reel

spindle, swings motor idler wheel against motor collar, moves pressure pad against tape and head and moves pressure roller against tape and capstan.

**NOTE:** Record Safety control must be moved to the left when turning Selector switch to the Record position.

**Record Safety Lock** — Prevents accidental erasure of tape during playback or rewind. Selector switch can be moved to the Record position unless this control is moved to the left.

### Mic Jack

Plug microphone into Mic jack for recording voice or music. Accessories such as a telephone pick-up, can be plugged into Mic jack.

**NOTE:** Do not make direct electrical connections to Mic jack from an external amplifier or speaker.

## DISASSEMBLY

### To Remove Recorder from Case

1. Remove Volume control knob, Selector knob and Record Safety Lock knob by pulling up off shafts.
2. Unscrew pressure roller retaining screw. Remove pressure roller, large black washer, phenol washer, and felt washer.
3. Remove four screws in top plate and remove top plate.

**NOTE:** The majority of mechanical adjustments can be made on the mechanism after the top plate has been removed.

4. Remove four nuts, four metal washers, and four rubber washers.
5. Lift mechanism up and unsolder two speaker leads at speaker. Remove mechanism from case.



## ADJUSTMENTS

### To Align Record-Playback Head

Adjust for maximum sound output by turning one or both adjusting screws, one on each side of the head, while playing a standard alignment tape.

## CLEANING

Pressure roller, capstan, capstan roller, record-play head, erase head, and tape guides should be cleaned occasionally with a soft cloth moistened with alcohol.

NOTE: Do not use carbon tetrachloride for cleaning.

## LUBRICATION

The motor should be lubricated once a year or after every 500 hours of operation, whichever occurs first. One or two drops of light oil on each bearing should be sufficient.

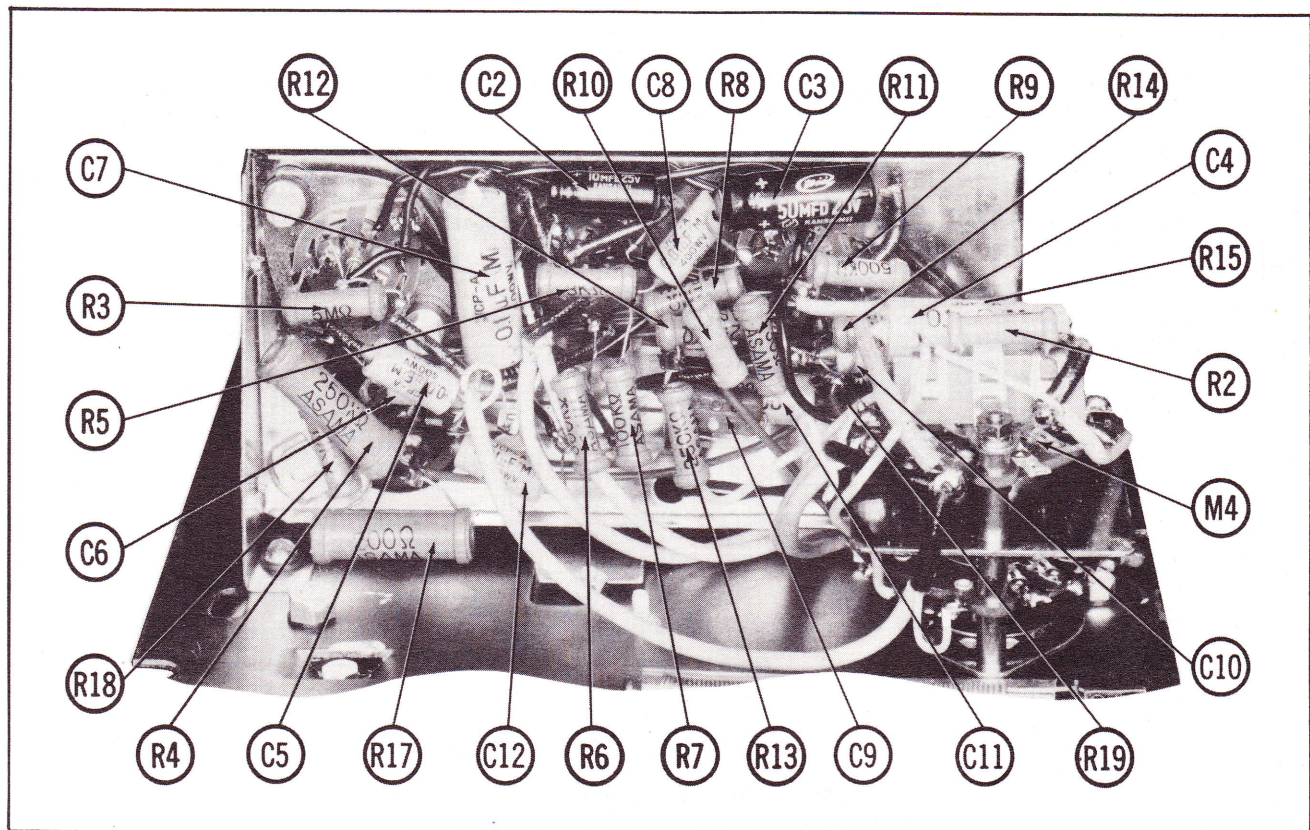
A drop of light oil should be injected into the oil holes in the reel spindles if the spindles tend to drag or bind.

When the mechanism is disassembled for repair, wipe all bearings and sliding levers with a clean cloth. Bearings should then be lubricated with light oil and sliding levers coated lightly with oil or light grease.

## TROUBLE CHART

Symptom	Cause	Remedy
Tape fails to move when selector knob is turned to Play or Record.	<ol style="list-style-type: none"> <li>1. Worn or dirty pressure roller (24).</li> <li>2. Pressure roller spring (29) loose or missing.</li> <li>3. Motor idler wheel (37) dirty or defective.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean or replace pressure roller (24).</li> <li>2. Reinstall or replace pressure roller spring (29).</li> <li>3. Clean or replace motor idler wheel (37).</li> </ol>
Tape fails to move when selector knob is turned to Rewind.	<ol style="list-style-type: none"> <li>1. Rewind spring (17) loose or missing.</li> <li>2. Rewind drive belt (4) loose or missing.</li> <li>3. Supply reel spindle (3) binding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reinstall or replace rewind spring (17).</li> <li>2. Reinstall or replace rewind drive belt (4).</li> <li>3. Inject drop of light oil in oil hole in supply reel spindle (3).</li> </ol>
Insufficient take-up tension.	<ol style="list-style-type: none"> <li>1. Take-up drive belt (15) loose or missing.</li> <li>2. Take-up reel spindle (14) binding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reinstall or replace take-up drive belt (15).</li> <li>2. Inject drop of light oil in oil hole in take-up reel spindle (14).</li> </ol>
Wow during play or record.	<ol style="list-style-type: none"> <li>1. Pressure roller spring (29) too tight.</li> <li>2. Motor idler wheel (37) dirty or defective.</li> <li>3. Pressure roller (24), capstan (28), or collar (27) dirty or oily.</li> <li>4. Reel spindle (3) or (14) binding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust or replace pressure roller spring (29).</li> <li>2. Clean or replace motor idler wheel (37).</li> <li>3. Clean pressure roller (24), capstan (28), and collar (27).</li> <li>4. Inject drop of oil in binding spindle (3) or (14).</li> </ol>
Recording weak or noisy.	<ol style="list-style-type: none"> <li>1. Dirty record-play head (33).</li> <li>2. Defective play-record head (33) or other electrical component.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean record-play head (33).</li> <li>2. Replace defective head (33) or part.</li> </ol>
Incomplete erase.	<ol style="list-style-type: none"> <li>1. Dirty erase head (34).</li> <li>2. Defective erase head (34) or electrical component.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean erase head (34).</li> <li>2. Replace erase head (34) or defective part.</li> </ol>





AMP. CHASSIS - BOTTOM VIEW

# MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	198	Collar, Motor Shaft	26	143	Arm, Pressure Roller
2	137	Set Screw, Reel Spindle	27	138A	Capstan Collar & Set Screw
3	133	Spindle, Supply Reel	28	138	Capstan & Flywheel Assembly
4*	196*	* Belt, Rewind Drive	29	159	Spring, Pressure Roller
5	150	Pulley, Rewind	30	162	Spring, Pressure Arm
6		Washer, Fiber	31	154	Arm, Pressure
7	179	Retainer, Spring	32	155	Pad, Felt Pressure
8	178	"E" Ring	33	119	Head, Record-Play
9	194	Cam, Actuating	34	120	Head, Erase
10	152	Lever, Brake	35	164	Spring, Motor Idler
11	158	Spring, Brake	36		Arm, Motor Idler
12	153	Shoe, Brake	37	146	Wheel, Motor Idler
13	137	Set Screw, Reel Spindle	38		Washer, Phenol
14	M14	Spindle, Take-up Reel	39	161	Spring, Motor Idler Lever
15	195	Belt, Take-up Drive	40	163	Spring, Cam Lever
16	178	"E" Ring	41	197	Motor
17	157	Spring Rewind	42		Fan, Motor
18	141	Lever, Cam Connecting		101	Case with Lid, Handle-Hdwe.
19	149	Lever, Connecting		102	Plate, Top
20	140	Cam, Rotary		103	Knob, Selector
21	142	Lever, Cam		104	Spring, Selector Knob
22	160	Spring, Record Safety Lever		105	Knob, Volume Control
23	156	Lever, Record Safety		106	Knob, Record Safety
24	144	Pressure Roller Assembly		107	Covers, Head
25	145	Set Screw, Pressure Roller			

\* Belt, Rewind Drive - WALSCO Part No. 1474

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# PARTS LIST AND DESCRIPTION

## TUBES

♦ AMPEREX ♦			♦ GENERAL ELECTRIC ♦			♦ RCA ♦			♦ RAYTHEON ♦			♦ SYLVANIA ♦		
ITEM No.	USE		TYPE			ITEM No.	USE		TYPE					
V1	AF Amplifier		12AV6			V3	Output Rectifier		50C5					
V2	AF Amplifier		12AU6			V4			35W4					

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	40	150	Note 1	PRS3675			FP311.5		PCLS-3440*
B	40	150							
C	40	150							
C2	10	25		PTT79	NLW10-25	MT1-5	TT25X10	MLV10-25	TE-1204
C3	50	25		PTT85	NLW50-25	MT1-17	TC29	MLV50-25	TE-1209

\* Not normally in distributor's stock. Available thru distributor on order to manufacturer.  
Note 1. CIC not used in some versions.

## FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.1 400V	Note 1	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C5	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C6	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM 411	4TM-S10
C7	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C8	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C9	100 10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C10	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C11	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C12	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10

Note 1. Value varies between 100-200mmf.

## CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA			
			WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.
R1	Volume & Switch	500K		B-60, or (AB-60, KR-1, AK-11) †	A47-500K-Z/, SWE-12, KSS-3 †	Q13-133, 76-1, or (BUI, CF25, SS1, GC) *†

† Drill 3/8" Mounting Hole.

\* "SNAPTROL".

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R2	1meg				R11	30Ω			
R3	5meg				R12	250K			
R4	250K				R13	250K			
R5	3000Ω				R14	100K			
R6	300K				R15	150K			
R7	100K				R16	3Ω 1W			
R8	2meg				R17	200Ω 1W			
R9	500K				R18	10K			
R10	100Ω				R19	27Ω			

\* Alternate Value.



## PARTS LIST AND DESCRIPTION (CONTINUED)

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			WEBCOR PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.						
T1	2.5K	3-4Ω		A-3025 ①	A-3332 ①	24S53 ①	S-12X ①	① Drill New Mounting Hole(s)

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				WEBCOR PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
SPI	4"	PM	3-4Ω	PM-4	4A07	

### TAPE HEADS

ITEM NO.	MEASURED			WEBCOR PART NO.	NORTRONICS PART NO.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1				119		Half-Track Mono Record-Play
M2				120		Half-Track Mono Erase

### MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M3	Motor	197	
M4	Switch	139	Record-Play-Stop-Rewind (Rotary Wafer Type)

### CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	105	Volume
Knob	103	Function
Knob	106	Record Safety
Case	101	Includes Lid, Handle and Hardware

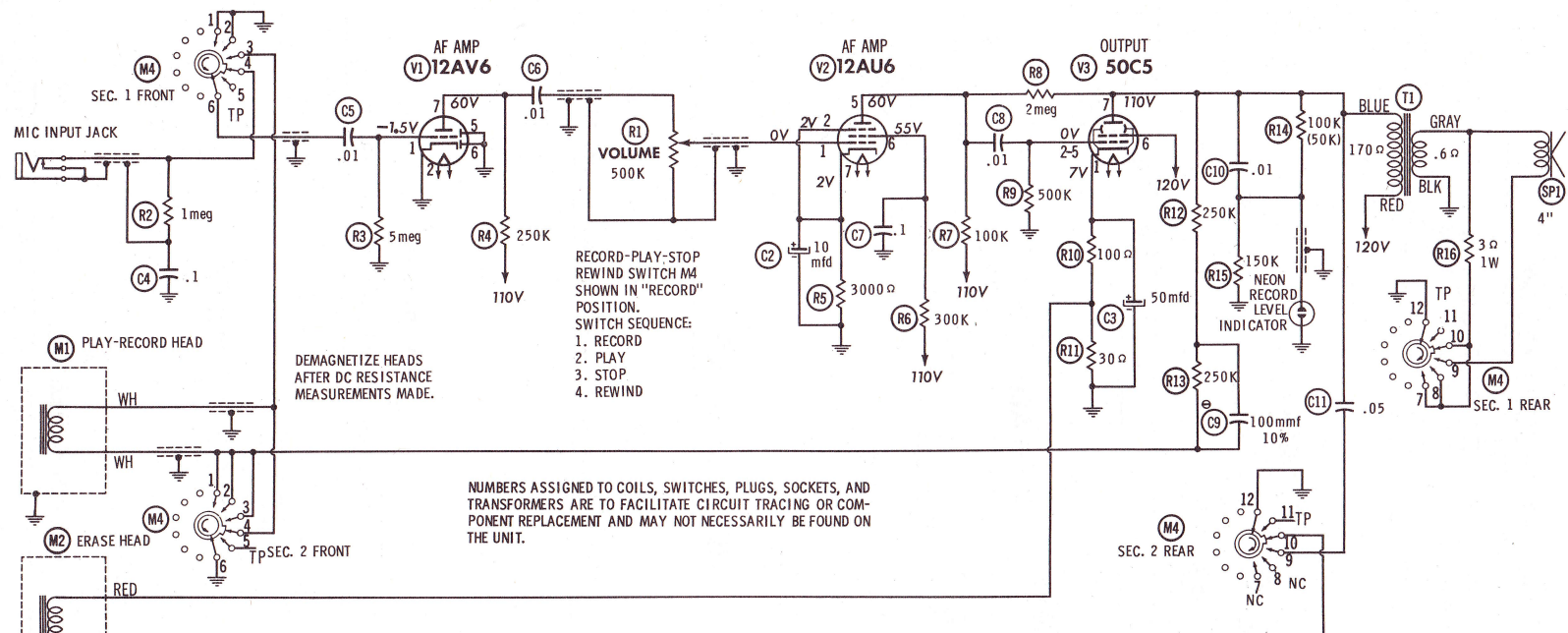
### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors
	8524 (Stranded) Available in 12 Colors
Power Cord .....	Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft.
	17109 (Plastic) or 17129 (Rubber) - 9 Ft.
Power Cord (Interlock Type) .....	Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)
Low-Loss Shielded Lead (Interconnecting) .....	Use BELDEN No. 8401 or 8421
Phono Pick-up Arm Cable .....	Use BELDEN No. 8430 (Two Conductor-Unshielded)
	8429 (Two Conductor-Shielded)
	8419 (Three Conductor-Shielded)

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RESISTANCE READINGS

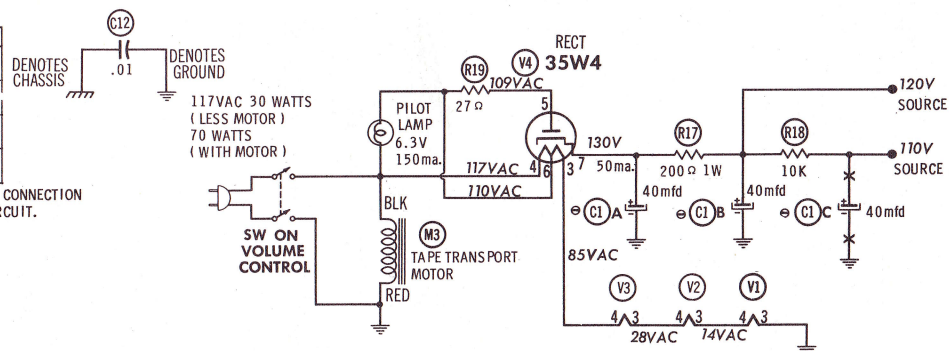
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AV6	5meg	0Ω	†0Ω	†15Ω	0Ω	0Ω	†260K
V2	12AU6	0Ω	3000Ω	†15Ω	†30Ω	†110K	†310K	3000Ω
V3	50C5	130Ω	500K	†30Ω	†90Ω	500K	†200Ω	†370Ω
V4	35W4	NC	NC	†90Ω	†130Ω	†142Ω	†115Ω	†

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION. NC NO CONNECTION  
 † THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.  
 ‡ MEASURED FROM PIN 7 OF V4.

SEE PARTS LIST FOR ALTERNATE  
 VALUE OR APPLICATION

- DC voltage measurements taken with vacuum tube voltmeter;
- AC voltages measured with 1000 ohm per volt voltmeter.
- Socket connections are shown as bottom views.
- Measured values are from socket pin to common ground.
- Line voltage maintained at 117 volts for voltage readings.
- Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
- All controls at minimum, proper output load connected.

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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